

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Currently Amended)** A vertical cavity surface emitting laser (VCSEL), comprising:

 an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including barrier layers sandwiching said at least one quantum well; and

 confinement layers sandwiching said active region, wherein the barrier layers and/or the confinement layers are comprised of a material that reduces a level of non-confining valence band discontinuity in the quantum well due to the presence of nitrogen in the quantum well.
2. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsN.
3. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.
4. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.
5. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well further comprises >1% N.
6. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well is up to and including 50Å in thickness.

7. **(Previously Presented)** The VCSEL of claim 5 wherein said at least one quantum well is up to and including 50Å in thickness.
8. **(Previously Presented)** The VCSEL of claim wherein said barrier layers are comprised of GaAsN.
9. **(Original)** The VCSEL of claim 5 wherein said confinement layers are comprised of AlGaAs.
10. **(Original)** The VCSEL of claim 7 wherein said barrier layers are comprised of AlGaAs.
11. **(Original)** The VCSEL of claim 8 wherein said confinement layers are comprised of AlGaAs.
12. **(Original)** The VCSEL of claim 5 wherein said barrier layers are comprised of AlGaAs.
13. **(Original)** The VCSEL of claim 12 wherein said confinement layers are comprised of AlGaAs.
14. **(Original)** The VCSEL of claim 1 wherein said at least one quantum well is further comprised of Sb.
15. **(Previously Presented)** The VCSEL of claim 14 wherein said barrier layers are comprised of GaAsN.
16. **(Original)** The VCSEL of claim 14 wherein said confinement layers are comprised of AlGaAs.

17. **(Original)** The VCSEL of claim 16 wherein said barrier layers are comprised of AlGaAs.

18. **(Original)** The VCSEL of claim 15 wherein said confinement layers are comprised of AlGaAs.

19. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well further comprises $>1\%$ N.

20. **(Original)** The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

21. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL) comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including AlGaAs barrier layers sandwiching said at least one quantum well; and
confinement layers sandwiching said active region.

22. **(Original)** The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

23. **(Previously Presented)** The VCSEL of claim 21 wherein said at least one quantum well is up to and including 50Å in thickness.

24. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL) comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said active regions.

25. **(Original)** The VCSEL of claim 24 wherein said barrier layers are comprised of AlGaAs.

26. **(Original)** The VCSEL of claim 24 wherein said barrier layers are comprised of InGaAsN.

27. **(Previously Presented)** The VCSEL of claim 24 wherein said at least one quantum well is up to and including 50Å in thickness.

28. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including AlGaAs barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said active region.

29. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including InGaAs barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said active region.

30. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN and including GaAsN barrier layers sandwiching said at least one quantum well; and
GaAsN confinement layers sandwiching said active region.

31. **(Cancelled).**

32. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN; and including GaAsN barrier layers sandwiching said at least one quantum well; and

AlGaAs confinement layers sandwiching said active region.

33. **(Previously Presented)** A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a well depth of at least 40 meV and comprised of InGaAsN; and including AlGaAs barrier layers sandwiching said at least one quantum well; and

GaAsN confinement layers sandwiching said active region.